

# How (not) to operationalize subnational political opportunity structures: a critique of Kestilä and Söderlund's study of regional elections.

[Kai Arzheimer](#) (Essex) and [Elisabeth Carter](#) (Keele)

## Abstract

Based on an aggregate analysis of the French regional elections of 2004, Kestilä and Söderlund (2007) examine the impact of subnational political opportunity structures on the success of the radical right and argue that such an approach can control for a wider range of factors and provide more reliable results than cross-national analyses. We dispute this claim on theoretical, conceptual and methodological grounds and demonstrate that their empirical findings are spurious.

## Introduction

Analysing the influence that features of the national political context exert on the vote for Western Europe's 'extreme' or 'radical' right<sup>1</sup> parties is now a minor industry (see for example Arzheimer & Carter 2006; Golder 2003; Jackman & Volpert 1996; Knigge 1998; Lubbers et al. 2002; Swank & Betz 2003), but in a recent contribution to this journal, Kestilä and Söderlund (2007) argue that research should give more consideration to what they call 'subnational political opportunity structures'. According to Kestilä and Söderlund, focusing on the subnational context within one country mitigates against three problems that trouble the existing contextual analyses: i) at the subnational level, the number of contexts is large in comparison to the number of relevant variables; ii) unique features of the party system are obviously held constant; and iii) the heterogeneity of the radical right party family need not be of concern (2007: 774-775).

Click here for HTML-Version of [Subnational Political Opportunity Structures in France](#)

This theoretical claim is backed up by an ecological analysis of the French regional elections of 2004. In a straightforward linear regression at the level of the département, Kestilä and Söderlund relate the electoral support for the Front National (henceforth FN) in the first round of those elections, as well as an index of the FN's electoral success (that assesses the FN's success in relation to the

Preprint. The final version will appear in  
European Journal of Political Research (2010)

leading contender), to five aggregate variables: turnout in the first round of the 2004 election, the logged district magnitude in the previous regional elections of 1998, the effective number of party lists (Laakso-Taagepera index) in 1998, the share of immigrants born outside the European Union in 1999, and the unemployment rate in 1999. They find that turnout and district magnitude have significant negative effects on the FN's electoral support,<sup>2</sup> whereas the effects of the number of party lists and unemployment are positive and significant. Most interestingly, the effect of immigration is *not* significantly different from zero in Kestilä and Söderlund's model of FN aggregate support. From these results, Kestilä and Söderlund conclude that the radical right benefits from low turnout levels, and that greater proportionality of the electoral system does not increase support for the radical right but is actually related to substantially *lower* levels of support. They also conclude that the FN benefited when the effective number of party lists in 1998 was high, and when unemployment levels were high. By contrast, the share of immigrants present in each département did not affect the FN's electoral score.

It should be noted that, while the results that relate to the district magnitude are in line with the findings of some other studies (e.g. Arzheimer & Carter 2006), those that pertain to unemployment and immigration are not: in country-level analyses the effect of unemployment is subject to on-going discussion, and the effect of immigration has been consistently found to be strong and positive.

From their results, and the findings of other studies notwithstanding, Kestilä and Söderlund argue that the 'subnational political opportunity structure has been of great importance for the FN' and more generally, that the subnational approach 'is able to control a wider range of factors pertaining to the political system and tends to provide more reliable results' (2007: 790).

Kestilä and Söderlund have invited other scholars working in the field to engage in a discussion of their unexpected findings. We have taken up this invitation because, while we concur that features of the subnational context are potentially relevant for the radical right vote and should be incorporated into more comprehensive accounts of support for these parties, we are not convinced by Kestilä and Söderlund's conceptualization of what constitutes a subnational political opportunity structure, and nor are we persuaded by the empirical evidence they present.

We begin this article by highlighting some of the theoretical, conceptual and methodological problems present in Kestilä and Söderlund's study. Then, since Kestilä and Söderlund were extremely forthcoming in providing us with their data, we engage in some re-analysis. In doing this we discuss the difficulties of estimating and interpreting the coefficients in Kestilä and Söderlund's model and, using an indicator for the FN's regional entrenchment that is independent of district magnitude and of the effective number of party lists, we demonstrate that features of the subnational political opportunity structure included in Kestilä and Söderlund's model are essentially spurious. We close by offering an alternative operationalization of one of the key variables contained in Kestilä and Söderlund's model.

## **Subnational Political Opportunity Structures: Conceptual Difficulties and Operationalization**

The concept of political opportunity structures is notoriously vague, but at its core is the idea that certain variables can capture the degree of ‘openness or accessibility of a political system for would-be political entrepreneurs’ (Arzheimer & Carter 2006: 422). If one accepts this as a working definition, it follows that *subnational* political opportunity structures refer to a set of regional or local conditions that would either facilitate or hamper the attempts of the radical right to mobilize voters. Precisely because the concept of political opportunity structures is so vague, identifying these conditions and operationalizing these variables is a tricky task, and unfortunately, there are problems with the way in which Kestilä and Söderlund have gone about this in their study.

Our first misgiving concerns the inclusion of (regional) party system fragmentation in Kestilä and Söderlund’s model, operationalized by the variable ‘effective number of party lists’. As Kestilä and Söderlund suggest, the level of party system fragmentation might indeed be important to small or new parties either because a high level of fragmentation at the previous election might indicate that the system is open and therefore more favourable to such parties or, conversely, because a high level of fragmentation might indicate that a wide variety of alternatives already exists, rendering it difficult for a small or new party to make a breakthrough (2007: 784).

However, using this variable in relation to the FN is problematic because, as Kestilä and Söderlund themselves point out, the FN is neither small nor new: it is a well established political competitor that has acquired the status of third political force in many parts of France (2007: 775). Therefore, given that it is not knocking on the door of the French party system but is already clearly inside it, the issue for the FN is not how accessible the party system is (which is what party system fragmentation measures), but is how much political space the party has or, put differently, how much competition it faces at the right end of the political spectrum. In short, we would argue that party system fragmentation is not an appropriate variable with which to measure party competition in this instance and that a much more relevant variable would be one that taps the ideological space available to the FN (see below).

Kestilä and Söderlund do briefly discuss the ideological aspect of party competition when they note that cross-national studies that have analysed the impact of political opportunity structures have had to operationalize and measure ideological convergence or divergence and issue adoption. However, although they recognize ‘that the local party organisations may have an agenda somewhat deviant from the national one’ (2007: 783), they do not include the ideological dimension of party competition in their model on the basis that a subnational analysis such as theirs benefits from being able to ‘hold the ideological differences constant in each subunit due to the national character of the campaign in the elections of 2004’ (2007: 775).

Now, it might indeed be the case that the campaign for the regional elections of 2004 took on a national character, but that does not mean that the contest was ideologically similar in all départements. A quick glance at the first round of the 2004 regional election results reveals that in some regions competition on the right of the political

spectrum was played out simply between the FN and one mainstream right party list (for example in Picardie). Elsewhere, however, there was more than one mainstream right party list and/or more than one list from the radical right. In Aquitaine, for instance, there were two mainstream right party lists, while in the Rhône-Alpes region not only was there an FN list, but there was also another ‘extreme right’ list. Similar patterns can be found with respect to the 1998 regional elections – the results of which Kestilä and Söderlund use to calculate their ‘effective number of party lists’.

The ideological nature of party competition has therefore varied by region and voters have been faced with a different choice of party lists according to where they live. This is likely to be important in an explanation of the FN’s success as the party may well be hindered by the presence of multiple mainstream right lists, and may also experience lower vote shares in départements where an alternative radical right list exists. By only including the party system fragmentation variable in their model, Kestilä and Söderlund fail to account for these trends.

Including the effective number of parties or party lists in analyses of the radical right party vote is also problematic for methodological reasons. This is because the vote share of the very party whose electoral success is being explained (in this case the FN) is included in the calculation of the effective number of parties:  $(1 / \sum p_i^2)$  for  $N$  parties, where  $p$  is the vote share of party  $i$ ). This means that the two variables cannot possibly be independent of each other, and that, given the construction of the index, there must be a non-linear relationship between them, the exact shape of which depends on both the number and relative strength of other parties.

The co-variance of these two variables is most easily illustrated by simulation. To do this, we selected the results from four random départements in the 1998 regional elections (since départements were treated as districts in 1998) and let the FN’s vote share vary around its empirical value while holding the relative support *within* the mainstream right bloc and the absolute support for all other party lists constant.<sup>3</sup> Figure 1 illustrates the results of this simulation and clearly shows that, at least in these four départements, a change in the fortunes of the FN within the département would *ceteris paribus* have a strong, positive and almost linear impact on the effective number of parties.<sup>4</sup>

[Figure 1 about here]

By including the effective number of party lists in 1998 in their model, Kestilä and Söderlund therefore effectively regress the FN’s success in 2004 on a variable that already encompasses previous levels of support for the party. This is problematic for theoretical reasons, and our simulation shows that it also has very real implications in terms of interpreting the effect of this variable.

Turning to district magnitude, we take no issue with Kestilä and Söderlund’s decision to include this variable in their model. For theoretical reasons it makes sense to do so: it will be harder for the FN – a medium-sized party – to win votes in districts with a small magnitude than it will be for it to be successful in districts with a greater magnitude.

Moreover, this effect will be exacerbated if the number of potential voters is small to begin with and if the party decides to invest fewer resources in districts with a small magnitude than it does in those with a larger magnitude.

What we are unhappy with, however, is the way in which this variable has been operationalized in Kestilä and Söderlund's study. They regress the FN's vote in each département in 2004 on the (logged) district magnitude in the 1998 regional election, and we would argue this is troublesome for two reasons.

Firstly, the inclusion of the (logged) district magnitude ignores the effect of legal thresholds which can and do override the effects of district magnitude. In the case of the electoral system of 1998, the five per cent legal threshold in place at the département level effectively cancelled out the effects of district magnitude in départements with a magnitude of 14 or more. Given that the district magnitude was 14 or more in 50 of the 94 départements, this has large implications for the model, and, as such, it would have made greater sense to include the effective magnitude or the effective threshold rather than simply the (logged) district magnitude.<sup>5</sup>

The second reservation we have about Kestilä and Söderlund's operationalization of district magnitude concerns their decision to use the (logged) district magnitude in the 1998 regional election – i.e. in the *previous* regional election. Kestilä and Söderlund do this because they maintain that 'changes in electoral laws may not necessarily have an immediate effect' and that the psychological effect of an electoral system may take a while to manifest itself. They also note that 'the district magnitude of 1998 and seats allocated to departments in 2004 have a very strong correlation' (2007: 792, note 7).

We certainly do not dispute the fact that psychological effects of electoral systems may take a while to register with voters, and as such, other than keeping an eye on our comments above about legal thresholds, we would have no criticisms of the use of this variable had the electoral system of 1998 been identical to that used in 2004. The problem, however, is that it was not: the electoral system used in 1998 was fundamentally different to that used in 2004.

The system used in the 1998 regional elections (in use since the first regional elections of 1986) was a one-round proportional electoral system. Between 3 and 72 seats were distributed at the level of the département and, as mentioned above, there was a five per cent legal threshold in place. In 2004 a new two-round electoral system came into operation, however. Under this system, even though seats were eventually divided up between departmental sections, it was at the level of the region that lists were presented, votes were aggregated and seats were distributed. The district magnitude of the regions ranged from 43 in the Limousin and Franche-Comté regions to 209 in the Ile-de-France region but the existence of legal thresholds meant that the effect of district magnitude was effectively cancelled everywhere.<sup>6</sup>

Given that the electoral system changed so fundamentally between 1998 and 2004, we believe that it is unrealistic to argue that the 1998 system still exerted a psychological effect on voters and political elites in 2004. If voters are well-informed and rational enough to react to the mediating effects of electoral systems in the first place, then they are hardly likely, on the one hand, to take the effects of the 1998 electoral system into

account, and yet, on the other, to fail to notice that the system has been changed thoroughly in the interim. And as concerns political elites, the effects of the 1998 system will not have entered into their calculations in 2004. Rather they will have taken the new electoral system into account when they decided on their campaigning strategies and on the resources they would invest in each district for the 2004 contest.

For these two reasons, therefore, we would argue that it does not make sense to use the (logged) district magnitude in the 1998 regional election as an indicator of the openness or accessibility of the political system in 2004. And the fact that the district magnitude of 1998 correlates very strongly with the seats allocated to départements in 2004 does not allay our fears because this correlation does not take account of the effects of legal thresholds and because the number of seats distributed to départements in 2004 is irrelevant since the allocation of seats took place at the level of the region, not at that of the département.

We are also uneasy about the inclusion of turnout in Kestilä and Söderlund's model. The issue here is not how this variable has been operationalized, but rather why it is included in the model at all.

Of course, turnout is commonly included in national and comparative election studies, and a number of these works have observed a negative correlation between turnout and support for parties that are not fully integrated into the party system (Reif et al. 1997; van der Eijk et al. 1996), including the FN, whose vote share has been found to be highly correlated with turnout in both presidential and legislative elections (Auberger 2008). It makes good sense to include turnout in studies of this kind since they are in the business of explaining patterns in individual voter behaviour. In this instance, they are able account for the negative correlation they find by arguing that, while politically dissatisfied supporters of the established parties may refrain from voting altogether, politically dissatisfied supporters of non-established parties can express their dissatisfaction with their vote.

The purpose of an analysis that seeks to assess the impact of political opportunity structures on political parties is altogether different, however. Here the aim is to investigate the opportunities and incentives that a given (subnational) context affords parties and politicians, and crucially, we would contend that turnout is not part of that context. Since the (local) turnout is clearly not known to anyone before the evening of the election day, we would argue it is neither part of an opportunity structure nor a general contextual variable that could somehow affect the probability of a radical right vote.

We certainly recognize that the level of turnout might reflect the attitudinal atmosphere or the intensity of political competition in a particular locality, and that this in turn, may indeed be important in explaining the success of a political party. However, we have concerns about using turnout as an (ex-post facto) indicator of attitudinal atmosphere or political competition because turnout will be affected by a whole host of other factors including the political tradition of an area, the specific local issues, the personalities involved in the campaign, and even the weather. As such, interpreting the cause of differing levels of turnout is highly problematic.

With their last two variables, Kestilä and Söderlund assess the effect of immigration and unemployment on the FN vote. Their model includes the share of the population of each département that is made up of immigrants born outside of the EU-15 and of unemployed people.<sup>7</sup> This, however, is problematic because the coefficients for immigration and unemployment pick up at least three different things: i) they may represent a true contextual effect whereby immigration and unemployment provide the FN with an incentive to mobilize voters and whereby voters who feel strongly about these issues have an opportunity to vote for a party that campaigns on them; ii) they pick up the effect of the composition of the départements; and iii) they reflect cross-level interactions between features of the context and features of individuals.<sup>8</sup>

This becomes clear if we consider départements with a high share of immigrants. If we assume that the presence of immigrants facilitates mobilization by the FN, then people living in such départements should, *ceteris paribus*, have a higher propensity to vote for the radical right. This *contextual* effect should therefore result in a positive aggregate correlation that reflects a subnational political opportunity structure.

However, things are not that simple because we also need to bear in mind the composition of départements and their immigrant population. In 1999 (the year of the census on which Kestilä and Söderlund rely), there were 4.0 million people living in France who had been born outside the EU-15.<sup>9</sup> However, the majority of these immigrants (57 per cent) were French citizens and, as such, had the right to vote. Presumably, they and any of their children born in France, as well as children born in France to non-naturalized immigrants, and many of these people's friends will have a probability of voting for the FN that is close to zero. Everything else being equal, therefore, these *individual* effects will result in a substantial negative aggregate correlation that counteracts the positive relationship resulting from the contextual effect.

Given that in roughly one third of all départements immigrants born outside of the EU make up more than five per cent of the population, and that in some départements of the Ile-de-France and the Provence-Alpes-Côte d'Azur regions they comprise up to 20 per cent of the population, the individual effect is not negligible, something which is reflected in the bad model fit for the banlieues of Paris (see below). Finally, such a scenario implies a cross-level interaction too, in that while the FN will be able to mobilize more voters because of high number of immigrants, it will only be able to do so among non-immigrants.

The same logic applies to the effect of unemployment, too. Observed aggregate correlations between unemployment and the FN vote are the result of a contextual effect (voters respond to regional unemployment levels), a compositional/individual effect (the unemployed are presumably more likely to vote for the FN), and possibly also a cross-level interaction effect: after all, it seems reasonable to assume that the strength of the individual effect of unemployment varies with the prevalence of unemployment in one's environment.

The aggregate correlations Kestilä and Söderlund present therefore conflate three conceptually different effects, the nature and size of which are impossible to separate without micro-data.<sup>10</sup> In addition, because these coefficients reflect the highly aggregated net result of different processes, they hide any co-variation that is likely to

exist both between and among individual and contextual variables.<sup>11</sup> For these reasons, the coefficients for unemployment and immigration in Kestilä and Söderlund's model do not provide reliable information on the role of unemployment and immigration within a political opportunity structure.

### **Estimating and interpreting the coefficients of Kestilä and Söderlund's model**

As the discussion above has demonstrated, Kestilä and Söderlund's model is problematic because all of the independent variables included in it raise theoretical, conceptual and/or methodological concerns. In addition to the problems that beset individual variables, the number of cases in Kestilä and Söderlund's model is not very large (N=94) and the units (départements) vary enormously in terms of their population. The standard deviation for this variable is .48 million people, and the distribution is substantially right-skewed. The number of inhabitants for the ten smallest départements varies between 77,000 and 190,000, whereas each of the ten largest départements has a population of between 1.3 and 2.6 million people. The implication is that a lot of information on individual behaviour is lost, and that the behaviour of citizens in large départements will, *ceteris paribus*, have a smaller impact on the aggregate correlations.<sup>12</sup>

However, even leaving aside these concerns, the effects of the different independent variables are either difficult to interpret or trivial. As mentioned already, the effects of immigration and unemployment cannot be unambiguously interpreted because both variables aggregate the individual characteristics of the voters of the 94 départements of mainland France and, in the process, conflate contextual and individual effects and cross-level interactions. As for the other variables contained in the model, even though they capture features of the départements that exist independently of the individuals living in them, as we will demonstrate, their political impact is small – a fact that is not apparent in Kestilä and Söderlund's reading of their findings. Moreover, as we will also show, the estimates in Kestilä and Söderlund's model are highly sensitive to the selection of cases.

Kestilä and Söderlund interpret their results mainly with reference to the relative size of the t-values, and this is problematic for three reasons. Firstly, the jury is still out on the question of whether it makes sense to calculate (classical) standard errors for data that are a population rather than a sample (Berk & Freedman 2003). Secondly, if significance tests are to be carried out, the calculation of the standard errors should take into account the spatial correlations that exist between départements. Ignoring these dependences violates the standard assumption that disturbances are identical and independently distributed. And thirdly, and most importantly, the size of a t-value (i.e. statistical significance) is not a criterion for substantive relevance, and so it assists little to an interpretation of the effects of the variable.

For these reasons, rather than focussing on the t-values, we would suggest that the effects of the variables are best interpreted by examining the expected change in the FN's vote share for a given change of the independent variables. At the same time as examining this, it is also important to consider the distribution of the independent variables if we are going to be able to say anything about political realities.

Kestilä and Söderlund do show us what the expected change in the FN's vote share is for changes in the independent variables. Indeed, although they do not discuss these expected changes in the text, in Table 3 of their article we can see that a unit increase in the logged district magnitude would reduce support for the FN by 3.45 percentage points, whereas a unit increase in the effective number of parties would increase the FN's share by 1.14 points. However, what these results do not do is take into account the distribution of the district magnitude and the effective number of party lists across départements and as such, they tell us little about the true impact of these variables on particular départements.

Let us first consider the logged district magnitude in 1998 and its distribution across départements. By identifying the second and the third quartile we can ascertain that in half the départements the total number of seats to be filled was between 10 and 22. And we can work out that by increasing the district magnitude from 10 to 22 while holding all other independent variables constant the expected support for the FN would be reduced by a mere 2.7 points.<sup>13</sup> This suggests that the effect of the district magnitude is fairly small across these départements. What is more, if we were to examine the middle 90 per cent of the distribution instead, we would find that the expected difference between the smallest district of eight seats and the biggest district of 31 seats would be 4.7 points. This is still not very large, and here we are considering the vast majority of cases. Thus, even though the effect of the logged district magnitude is statistically significant, it seems that it is only really relevant when we consider very small and very large départements.<sup>14</sup>

When we repeat this exercise for the effective number of party lists, we see that increasing the effective number of party lists from 2.6 (the second quartile) to 3.5 (the third) would increase support for the FN by just one percentage point. And if we consider the middle 90 per cent of the distribution, where the effective number of party lists ranges from 2.2 to 4.2, we see that a change from 2.2 to 4.2 would give rise to a 2.3 percentage point increase in the FN's vote share.

As well as taking into account the distribution of the independent variables across départements we also need to bear in mind that their effect can be conditional on the levels of the other four independent variables in each département. This is the case for district magnitude: the bivariate correlation between district magnitude and FN support is essentially nil in Kestilä and Söderlund's model, and only becomes negative once both turnout and unemployment are included in the model. Yet if we move away from the overall model and consider different subgroups of départements, we see that the relationship is actually *positive* for départements with below-average unemployment and turnout levels, whereas it is negative if either turnout or unemployment or both are above average. This rings alarm bells because there is no obvious theoretical reason for this finding. As such, and particularly because the number of units is low, it points to the possibility that the negative effect of district magnitude (as well as the positive effect of the number of party lists) may be spurious and driven by outlying and otherwise unusual observations.

To investigate this suspicion further, we calculated a number of diagnostics (studentized residuals, Cook's distance, and leverage values) that can be used to identify problems with the model fit. We found that one département – Seine-Saint-Denis, which, with the

neighbouring départements of the Hauts-de-Seine and the Val-de-Marne, forms the infamous banlieues of Paris – clearly stood out. Seine-Saint-Denis has the highest share of immigrants born outside the EU and the second-largest population of that group in absolute terms, and yet levels of FN support here are far below what Kestilä and Söderlund’s model predicts: while they predicted that the FN would poll 25.5 per cent in this département, the actual result in 2004 was 15.8 per cent. This just goes to show what happens when the contextual and compositional effects of the immigration rate are conflated. Furthermore, the impact of this département on the model is large as it is an influential data point in terms of the independent variables and is the largest negative outlier. If it is excluded from the estimation the coefficient for the immigration variable almost doubles and becomes statistically significant.

The largest positive outlier, by contrast, is the Vaucluse in the Provence-Alpes-Côte d’Azur region. This département had an average district magnitude in 1998 and slightly above-average figures for all other independent variables. While Kestilä and Söderlund’s model predicts a vote share of 18.7 per cent for the FN in the Vaucluse, the actual result was a staggering 28.5 per cent. The high support for the FN in this département reflects a political tradition that dates back to the 1980s. In the legislative elections of 1986, Jacques Bompard, a founding member of the FN, polled 18 per cent for the party in this département – one of the best results for the party in that election. Bompard (who left the party in 2005) was also instrumental in the FN’s successes at the local and the regional level, and in 1995 he became mayor of Orange (a historical town in the Vaucluse), being one of the first members of the FN to hold such an office.<sup>15</sup>

Since the Vaucluse does not have much leverage (as regards the independent variables, it is pretty average in almost every way), excluding it from the estimation does not greatly affect the coefficients. However, with just 94 départements, the *joint* leverage of a small group of three or four cases can easily be a problem (Fox 1997: 281). Indeed, it is possible to manipulate the coefficients considerably by excluding a tiny fraction of the départements. For instance, excluding not only the Vaucluse but also Paris (i.e. département 75) and the Territoire de Belfort in the Franche-Comté region reduces the absolute value of the coefficient for the logged district magnitude from -3.4 to -2.8. By contrast, excluding Seine-Saint-Denis and two rural départements with low unemployment and immigration rates – the Cantal in the Auvergne and the Haute-Vienne in the Limousin – *increases* the coefficient to -4.3. Similarly, excluding Seine-Saint-Denis together with the Haut-Rhin in Alsace (a FN stronghold) and the Lot-et-Garonne in Aquitaine halves the coefficient for the effective number of party lists.

The most striking effect is observed if we consider the share of immigrants born outside the EU. This coefficient is rather small (.15) and statistically insignificant in Kestilä and Söderlund’s model. Excluding the Vaucluse and two other départements where the FN is very successful – the Ain in the Rhône-Alpes region and the Alpes-Maritime in Provence-Alpes-Côte d’Azur – further reduces the effect of immigration to .03. However, excluding Paris, Seine-Saint-Denis and either of the other banlieues départements (Val-de-Marne or Hauts-de-Seine) almost triples the coefficient and turns immigration in a powerful (and statistically highly significant) predictor of FN success. Not only does this illustrate just how sensitive the estimates in Kestilä and Söderlund’s model are to the selection of cases, but it also highlights once again that the model

conflates contextual (i.e. opportunity structure) and compositional (i.e. individual) effects.

Clearly, one could question this practice of excluding individual départements for diagnostic purposes given that Kestilä and Söderlund are examining the population of French départements rather than a sample. That said, doing this does enable us to assess just how accurate an instrument Kestilä and Söderlund's model is for examining the impact of subnational political opportunity structures on the FN vote in the regional elections of 2004, and indeed for making generalizations beyond this particular electoral contest.

To further investigate our concerns about the spurious nature of the effects of the variables included in Kestilä and Söderlund's model, we introduced an alternative predictor into their model: the vote won by Jean-Marie Le Pen in each département in the first round of the 2002 presidential election. The theoretical relevance of this variable in the context of the regional elections of 2004 is clearly only modest. That is, while we do expect Le Pen's 2002 vote score to be a strong predictor of the FN's vote in the 2004 regional elections because this would demonstrate that FN support at the departmental level is stable over time, the main purpose of introducing this additional variable into the model is to observe what happens to the effects of the other independent variables.

We chose this particular variable because it allows us to control for the fact that, over decades, the FN has been much more successful in some parts of France than in others (Bréchon & Mitra 1992), something which is due to the stabilizing effect of local party organizations (Lipset & Rokkan 1967: 53) and to the compositional effects and structural factors that benefit the party. Furthermore, the vote won by Le Pen in 2002 is an attractive measure of FN entrenchment because it cannot possibly have been affected by the district magnitude and the effective number of party lists in the regional elections in 1998 as the 2002 election was held under a completely different electoral system. As such, including this new variable in the regression should yield unbiased results for the relationship between FN support in 2004 and district magnitude/party system fragmentation in 1998, net of any other (stable) factors that are related to FN success at the departmental level.

[Table 1 about here]

Table 1 presents the coefficients of Kestilä and Söderlund's original model as well as those for the augmented model (column 2). As we expected, the vote for Le Pen in the presidential election of 2002 turns out to be a strong predictor of FN success in the regional elections of 2004: each percentage point increase in support in 2002 translates into an increase of .98 percentage points in the party's vote in 2004.

More important, however, is the fact that, once the *lepeniste* vote is controlled for, all other factors except unemployment are of very minor importance, with estimates that are very close to zero.<sup>16</sup> The lack of relevance of the five original independent variables is confirmed by a further model (column 3 of Table 1) in which all of the five original

predictors are dropped and which shows FN support in the 2004 regional elections to be essentially identical to Le Pen's vote in 2002 minus a constant of 2.7 percentage points.<sup>17</sup>

The discussion above suggests that, in the first instance, the lack of robustness of Kestilä and Söderlund's model means it is unable to provide a compact description of the FN's success at the departmental level in the 2004 regional elections. However, from both of the alternative models presented in Table 1 we have to conclude that the features of the subnational political opportunity structure included in Kestilä and Söderlund's original model were largely irrelevant in explaining the FN's vote in the 2004 regional elections anyway. As such, Kestilä and Söderlund's model does not enable reliable inferences to be made about the impact of contextual factors on the radical right vote in Western Europe more generally, let alone allow for inferences that are more reliable than those made in the existing cross-national studies.

### **Towards an alternative model of FN success in the 2004 regional elections?**

While we have demonstrated that Kestilä and Söderlund's analysis suffers from a whole host of conceptual and methodological problems, we are still convinced that subnational political opportunity structures can, in principle, be very useful in accounting for the electoral success of radical right parties (and indeed any other type of party) provided this concept is operationalized in a more stringent way.

Given the data at hand, and especially given the lack of micro-level data on immigration and unemployment, the most obvious way the model may be improved is by replacing the 'effective number of party lists' variable with a variable that captures the ideological nature of party competition in the regional elections of 2004. As we argued earlier, the effective number of party lists reflects the accessibility of the regional party system, which is rather irrelevant in the case of the FN. Moreover, this variable has an element of tautology to it as it is not independent of previous levels of support for of the party. We therefore suggest replacing the effective number of party lists with two very simple variables: i) the presence of a second 'extreme right' list presented by the Mouvement National Républicain (MNR), and ii) the number of lists submitted by parties of the moderate right. Information pertaining to the lists presented in each region is readily available from the French government's website ([www.interieur.gouv.fr/](http://www.interieur.gouv.fr/)).

We would expect the presence of an MNR list to reduce support for the FN, albeit only slightly. Given that the MNR broke away from the FN in January 1999 and is led by Le Pen's former deputy, Bruno Mégret, one would expect many voters to see this party as a substitute for the FN.<sup>18</sup> As such, the presence of an MNR list should, *ceteris paribus*, reduce support for the FN because the political space available to the FN is more crowded. That said, we anticipate that the effect will only be modest because the MNR's challenge to the FN effectively collapsed with the 2002 presidential election (Kuhn 2005: 102), when Mégret picked up only 2.3 per cent of the vote in the first round while Le Pen won 16.7 per cent and went on to contest the second round against the incumbent president, Chirac.

The number of mainstream competitors should also have a negative effect on the FN's vote. Since this effect will not necessarily be linear, we will distinguish between three different scenarios: the presence of a single mainstream right list; the presence of two such lists; and the presence of three or more.

[Table 2 about here]

As a point of reference, column 1 of Table 2 shows the regression of the FN's vote share in 2004 on the effective number of party lists in 1998 – i.e. the indicator favoured by Kestilä and Söderlund. The effect of this variable is slightly stronger in this bivariate model than it was in Kestilä and Söderlund's complete model, but the very low  $R^2$  shows that it explains only a tiny fraction of the variation in the FN's support. What is more, as is evident in column 2, the effect of the effective number of party lists disappears completely if we control for entrenched FN support by once again introducing our alternative predictor (the vote won by Le Pen in the first round of the presidential elections of 2002) into the model.

Column 3 of Table 2 presents the results of a model based on our alternative operationalization of party competition. It includes a dummy variable which takes a value of 1 in each département where the MNR presented a list, and dummy variables for the presence of two mainstream right lists, and three or more mainstream right party lists. This alternative model clearly fits the data much better than the effective number of party lists model. It explains a larger share of the variance in the FN's vote, and the lower Bayesian Information Criterion (BIC) indicates that even though it includes more independent variables (and hence loses two degrees of freedom), this alternative model is preferable to the effective number of party lists one.

In this model the coefficients for competition from the moderate right have a straightforward interpretation and confirm our expectations: the FN's vote in 2004 is reduced in départements where there were multiple moderate right lists. Compared to départements where the moderate right presented just one list, the FN vote is substantially (by over 6 percentage points) reduced where the party faced two mainstream right party lists. Where there were more than two mainstream right lists, the FN's vote is reduced by over 3 percentage points.

Contrary to our initial expectation, however, we see that the presence of an MNR list in the 2004 elections does not reduce support for the FN. Rather, the presence of an MNR list has a substantial *positive* effect on the vote of the FN in 2004: after controlling for party competition from the mainstream right, the FN is on average 3.2 percentage points *stronger* in départements where the MNR fields candidates. We might explain this unexpected positive effect by pointing to the strategic choices made by the MNR's leadership. While the FN presented candidates in all regions (and all départements), the MNR, stretched for money and staff, focussed its efforts on regions where the radical right had done well in the past – i.e. in areas where it might expect to do well. It contested 11 of the 14 regions where then FN had won above-average results in 1998 but chose to fight in only 2 of the 7 regions where the FN's performance was below its average in 1998 (Cramér's  $V=0.49$ ). The coefficient therefore picks up both the negative

impact of competition from the MNR as well as the positive effect of previous FN support.

Our tentative explanation is confirmed by the findings in column 4 of Table 2: once we introduce the now familiar indicator for entrenched FN support, the effect of a competing MNR list becomes negative, as expected. Moreover, the effects of competition from the moderate right remain negative, though they are substantially reduced. This latter finding might again reflect strategic considerations of the FN's competitors. After all, there are clear incentives for the moderate right to present a unified list in FN strongholds, something which is evidenced by a substantial correlation of  $r=0.42$  between the FN support in the preceding regional election and the presence of a single mainstream right list.

The most important point about the model presented in column 4 of Table 2 is that the presence of an MNR list and the fragmentation of the mainstream right continue to have a theoretically meaningful effect even if previous FN support is controlled for. Moreover, the BIC indicates that this is an improvement over both the model that combined Kestilä and Söderlund's effective number of party lists and the *lepeniste* vote (column 2) and the 'pure' model of entrenched FN support from Table 1. We take this as evidence that local/regional ideological competition matters and that it should be included in a subnational political opportunity structure model for radical right parties. The same cannot be said for the effective number of party lists.

As regards the other variables in Kestilä and Söderlund's model, there is, unfortunately, no 'easy fix'. We believe that some of them – namely turnout and district magnitude in 1998 – should not be included in the model at all because their conceptual status is dubious. Replacing district magnitude in 1998 with district magnitude in 2004 is also not an option because there is effectively no variation in this variable due to the legal thresholds in operation. And as for immigration and unemployment, although these are clearly part of the subnational political opportunity structure, in the absence of micro-level data it is simply not possible to investigate their impact and to untangle their contextual, compositional and cross-level effects.

Given this situation it appears that a major data collection effort is required if subnational political opportunity structures are to be operationalized rigorously and analysed fully and we would argue that such an endeavour should really go beyond merging survey data with subnational immigration and unemployment figures because Lubbers and Scheepers (2002) have already conducted an analysis of this kind for France. Rather, in an ideal world, a prospective project should collect data on variables that capture the theoretical concept of subnational political opportunity structures. This might include a content analysis of the local and regional media so as to capture its tenor (see Boomgaarden & Vliegenthart 2007 for a recent application to the national media in the Netherlands), an assessment of the organizational strength of local parties (see Pedahzur & Brichta 2002 on the institutionalization of the FN), and in-depth interviews with local political elites to probe their stances on radical right issues.

## **Conclusion**

In their article, Kestilä and Söderlund highlight an important point, which although sometimes discussed in theoretical terms (e.g. Eatwell 2003), has largely been overlooked in empirical studies of the success of the radical right in Western Europe: local and regional contexts should not be ignored. Unfortunately, however, the importance of this message is somewhat obscured by the actual analysis that Kestilä and Söderlund carry out. For the reasons outlined above, we believe that there are difficulties with both Kestilä and Söderlund's conceptualization of subnational political opportunity structures and their empirical findings.

A large data collection exercise focussing on factors that capture the concept of subnational political opportunity structures could potentially resolve many of the problems that Kestilä and Söderlund encountered in their study. Moreover, if time and resources were invested in any such future project, it would be all the more useful to analyse the relevant variables in a cross-national perspective. After all, authors such as Lubbers and Scheepers (2001, 2002) and Dülmer and Klein (2005) have already applied standard models of radical right voting to subnational units in individual countries.

That said, we fully concede that constructing cross-national models of radical right voting that contain rich information on very small subnational units (smaller even than French départements) would be a substantial accomplishment. Although collecting suitable data on one country is possible – as the British Election Study demonstrated more than ten years ago – gathering appropriate, comparable data across many countries would be a formidable feat. What is more, a cross-national study of subnational political opportunity structures would have to grapple with difficulties that are inherent to comparative analyses of this kind. That is, it would have to deal with the trade-off that exists between being able to draw conclusions that may be generalized beyond the cases in question and being able to gain an understanding of the intricacies of the particular contexts being examined. Indeed, some of the difficulties that Kestilä and Söderlund faced in their study reflect this very point: on the one hand their model is very sensitive to the selection of cases and hence does not allow for generalizable inferences to be made beyond the context of the 2004 French regional elections, but yet, on the other, it does contain rich information on the characteristics of the French regions and départements. This trade-off between generalizability and richness of data might raise questions over the very utility of any cross-national study of subnational political opportunity structures. Yet, if an appropriate balance can somehow be struck between these two concerns, we might learn a great deal more about the impact of local and regional contexts on the vote for radical right parties.

## Notes

---

<sup>1</sup> The choice between these two terms seems to be largely a matter of taste. To avoid unnecessary confusion, we follow Kestilä and Söderlund who chiefly use the adjective ‘radical’.

<sup>2</sup> Since the findings for the index of electoral success are largely comparable, our discussion will focus on the more straightforward measure of electoral support (i.e. vote share).

<sup>3</sup> In other words, in this simulation we assumed that voters would move between the FN list and mainstream right lists (i.e. RPR, UDF, and ‘divers droite’ lists) but not between left and right blocs. We further assumed that movements within the right bloc would not trigger movements between other parties. If we drop these assumptions and instead suppose that support for the FN comes from and goes to *all* other parties the results are almost identical. In both simulations, the upper threshold is the FN’s empirical vote share plus ten percentage points. The lower threshold is either the empirical vote share minus 20 percentage points or zero.

<sup>4</sup> The Pearson correlation for these four curves, which picks up the linear component, varies between .73 (Vaucluse) and .96 (Haute-Vienne and Indre).

<sup>5</sup> The share of the vote a party must win in order to gain parliamentary representation is determined either by the district magnitude or by the existence of a legal threshold if that legal threshold overrides the impact of district magnitude. To ascertain whether it is the district magnitude or the legal threshold which determines the vote a party needs for representation, or indeed to compare electoral systems with and without legal thresholds, we can make use of either Taagepera and Shugart’s ‘effective magnitude’ (1989: 135–141), or Lijphart’s ‘effective threshold’ (1994:182-183, note 29). Using the latter, the formula for which is  $75/(M+1)$ , we can see that if there had been no legal threshold in place in the regional elections of 1998, parties would have needed to win 18.75 per cent of the vote to gain representation in the district with the smallest magnitude (the Lozère which had a district magnitude of 3), whereas they would have needed only 1.03 per cent of the vote to win representation in the département with the largest magnitude (i.e. the Nord which, as the most populous département, had a district magnitude of 72). In the Nord the legal threshold clearly overrides the effects of district magnitude. Indeed, the point at which the legal threshold starts overriding the effect of district magnitude is 14, since a district magnitude of 14 implies an effective threshold of 5 per cent.

<sup>6</sup> The electoral system used in 2004 included a number of legal thresholds. The law stipulated that in order for a party list to proceed from the first round of the election to the second it had to win at least ten per cent of the valid votes in the region. Lists that won five per cent in the region could also proceed if they fused with a list that had won ten per cent of the valid votes in the region. The party list which won an absolute majority at the first round (if this occurred) or a plurality at the second round was given an automatic 25 per cent of the seats. The remaining seats were distributed proportionally among all party lists that had won at least five per cent of the votes in the region (Kuhn 2005; [www.interieur.gouv.fr](http://www.interieur.gouv.fr)). As it turned out, no party list won an absolute majority in the first round of the 2004 elections in any of the 22 regions of metropolitan France so all contests went to a second round. Had there been no legal thresholds in place in 2004 parties would have been able to win seats with very small percentages of the vote: district magnitudes of between 43 and 209 would infer effective thresholds of between 1.7 per cent and 0.36 per cent (see note 5). As such, the legal thresholds overrode the effects of district magnitude in all cases.

<sup>7</sup> Figures that pertain to the number of immigrants born outside of the EU do not capture the racial, ethnic, and/or religious characteristics of immigrants, something which is less than ideal in this instance given the FN’s appeals centre on notions of race, ethnicity and religion. That said, data on the racial, ethnic and religious attributes of immigrants in France have not been collected.

<sup>8</sup> When both micro- and macro-data are available, separating these effects (by way of a multi-level model) is relatively straightforward. When only macro-level data is at hand (as in this instance), things are much more difficult, however. Indeed, the interpretation of pure macro-data leads almost inevitably to cross-level inferences which are highly problematic unless very specific assumptions hold (Achen & Shively 1995; Alker 1969; Robinson 1950). These assumptions include the need for extreme distributions (i.e. départements with almost no unemployment or immigration and départements with almost full or no unemployment or immigration) which would then enable the calculation of a range of individual correlations that are compatible with the observed aggregate correlations. Even then, however, one would need to be very cautious. What is more, things are even more complicated in this instance because, since Kestilä and Söderlund are interested in contextual effects, their study is not a straightforward ecological analysis of individual behaviour. Rather, their interest in contextual effects means that they imply a two-level model: conditions vary at the level of the département; these then affect whether party lists are presented at all, whether parties chose to present individual or joint lists, and just how many parties try to

---

mobilize voters; and these two factors then affect the behaviour of individual voters.

<sup>9</sup> This does not include people born in the *départements d'outre-mer* and the *territoires d'outre-mer* (DOM-TOM), which are considered part of France for census purposes.

<sup>10</sup> See note 8.

<sup>11</sup> For instance, immigrants have a well above-average propensity of being unemployed, but individual unemployment status will in all likelihood have a different effect on the probability of an FN vote for immigrants and non-immigrants.

<sup>12</sup> The latter problem could be rectified by weighting the départements according to their population. In the event the coefficients do not actually change that much if départements are weighted by population, though the coefficient for immigration is effectively reduced to zero and the adjusted  $R^2$  decreases.

<sup>13</sup>  $\ln(22) - \ln(10) \times 3.45$

<sup>14</sup> What is more, these calculations ignore the fact that the effects of district magnitude are effectively cancelled out in districts with a magnitude of 14 or more because of the existence of a five per cent legal threshold – see note 5. Had the effects of this legal threshold been taken into consideration, the effect of district magnitude would have been even smaller.

<sup>15</sup> Bompard was re-elected as mayor of Orange in 2001. Then, in September 2005 he resigned from the FN and joined the *Mouvement pour la France* (MPF) three months later. He was again re-elected as mayor in March 2008.

<sup>16</sup> The augmented model also allows much better predictions than the original one: the adjusted  $R^2$  almost doubles, while the mean squared error of the prediction is reduced by roughly 50 per cent. Given that just one additional parameter is estimated, the drop in the log-likelihood is massive. Accordingly, the Bayesian Information Criterion (BIC), which relates the improved fit of a more complex model to the 'costs' of adding parameters, drops substantially, indicating that the augmented model is indeed preferable to the original one.

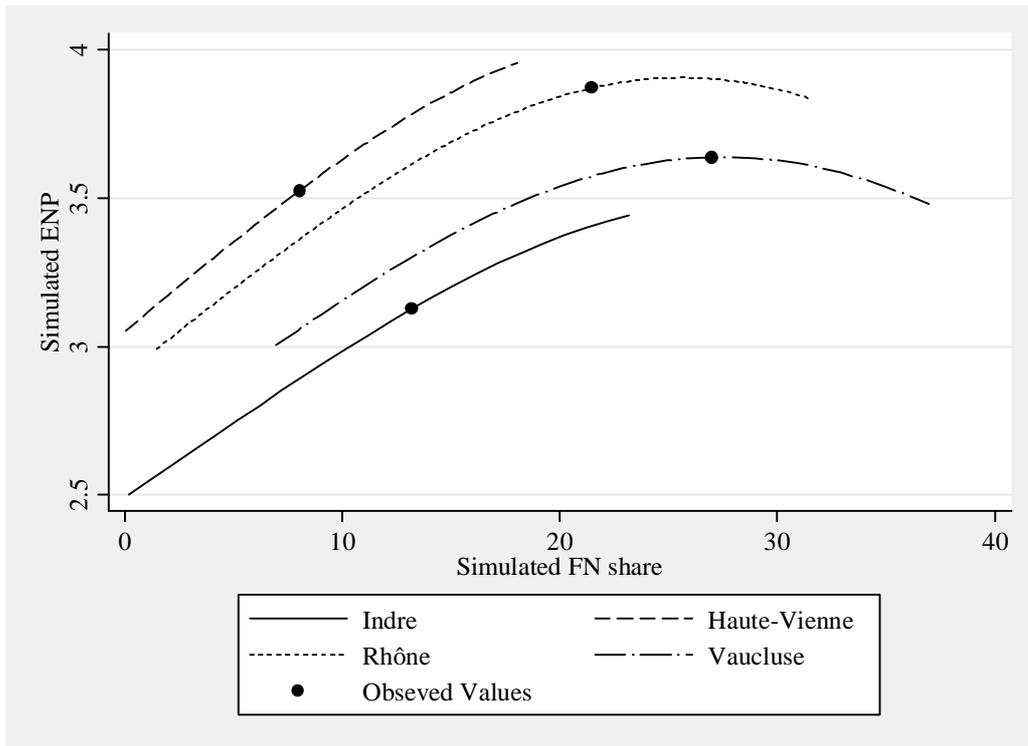
<sup>17</sup> This simple model fits the data almost exactly as well as the augmented model, resulting in an even lower BIC.

<sup>18</sup> Mégret announced his retirement from politics in May 2008 and the following month it was decided at the MNR's National Council that the party would henceforth be led by the 7-member Executive Bureau.

## References

- Achen, C.H. & Shively, W.P. (1995). *Cross-level inference*. Chicago: University of Chicago Press.
- Alker, H.R. (1969). A typology of ecological fallacies. In M. Dogan & S. Rokkan (eds), *Quantitative ecological analysis in the social sciences*. Cambridge, MA/London: MIT Press.
- Arzheimer, K. & Carter, E. (2006). Political opportunity structures and right-wing extremist party success. *European Journal of Political Research* 45(3): 419–443.
- Auberger, A. (2008). The National Front vote and turnout in the French Presidential elections. *French Politics* 6(1): 94–100.
- Berk, R.A. & Freedman, D.A. (2003). Statistical assumptions as empirical commitments. In T.G. Blomberg & S. Cohen (eds), *Punishment and social control: Essays in honor of Sheldon L. Messinger*. 2 ed. New York: Aldine de Gruyter.
- Boomgaarden, H.G. & Vliegenthart, R. (2007). Explaining the rise of anti-immigrant parties. The role of news media content. *Electoral Studies* 26(2): 404–417.
- Bréchon, P. & Mitra, S.K. (1992). The National Front in France. The emergence of an extreme right protest movement. *Comparative Politics* 25(1): 63–82.
- Dülmer, H. & Klein, M. (2005). Extreme right-wing voting in Germany in a multilevel perspective. A rejoinder to Lubbers and Scheepers. *European Journal of Political Research* 44(2): 243–263.
- Eatwell, R. (2003). Ten theories of the extreme right. In P.H. Merkl & L. Weinberg (eds), *Right-wing extremism in the twenty-first century*. London: Frank Cass.
- Fox, J. (1997). *Applied regression analysis, linear models, and related methods*. Thousand Oaks, CA: Sage.
- Golder, M. (2003). Explaining variation in the success of extreme right parties in Western Europe. *Comparative Political Studies* 36(4): 432–466.
- Jackman, R.W. & Volpert, K. (1996). Conditions favouring parties of the extreme right in Western Europe. *British Journal of Political Science* 26(4): 501–521.
- Kestilä, E. & Söderlund, P. (2007). Subnational political opportunity structures and the success of the radical right. Evidence from the March 2004 regional elections in France. *European Journal of Political Research* 46(6): 773–796.
- Knigge, P. (1998). The ecological correlates of right-wing extremism in Western Europe. *European Journal of Political Research* 34(2): 249–279.
- Kuhn, R. (2005). The French regional and European elections, 2004. *Representation* 41(2): 96–105.

- Lijphart, A. (1994). *Electoral systems and party systems. A study of twenty-seven democracies, 1945-1990*. New York: Oxford University Press.
- Lipset, S.M. & Rokkan, S. (1967). Cleavage structures, party systems, and voter alignments: An introduction. In S.M. Lipset & S. Rokkan (eds), *Party systems and voter alignments: Cross-national perspectives*. London: Collier-Macmillan.
- Lubbers, M. & Scheepers, P. (2001). Explaining the trend in extreme right-wing voting. Germany 1989-1998. *European Sociological Review* 17(4): 431–449.
- Lubbers, M. & Scheepers, P. (2002). French Front National voting: A micro and macro perspective. *Ethnic and Racial Studies* 25(1): 120–149.
- Lubbers, M., Gijsberts, M. & Scheepers, P. (2002). Extreme right-wing voting in Western Europe. *European Journal of Political Research* 41(3): 345–378.
- Pedahzur, A. & Brichta A. (2002). The institutionalization of extreme right-wing charismatic parties: a paradox? *Party Politics* 8(1): 31–49.
- Reif, K., Schmitt, H. & Norris, P. (1997). Second-order elections. *European Journal of Political Research* 31(1-2): 109-124.
- Robinson, W.S. (1950). Ecological correlation and the behavior of individuals. *American Sociological Review* 15(3): 351–357.
- Swank, D. & Betz, H-G. (2003). Globalization, the welfare state and right-wing populism in Western Europe. *Socio-Economic Review* 1(2): 215–245.
- Taagepera, R. & Shugart, M.S. (1989). *Seats and votes. The effects and determinants of electoral systems*. New Haven, CT: Yale University Press.
- van der Eijk, C., Franklin, M. & Marsh, M. (1996). What voters teach us about Europe-wide elections. What Europe-wide elections teach us about voters. *Electoral Studies* 15(2): 149-166.



**Figure 1:** The relationship between the effective number of party lists and the vote share of the FN in four French départements in the 1998 regional elections

**Table 1:** Alternative models of FN support in the French 2004 regional elections

	(1) Kestilä & Söderlund's model	(2) Kestilä & Söderlund's model plus Le Pen vote	(3) Le Pen vote only
District magnitude 1998 (ln)	-3.447 <sup>***</sup> (0.855)	-0.352 (0.475)	
Effective number of lists 1998	1.137 <sup>*</sup> (0.484)	-0.0582 (0.256)	
Turnout 2004 (per cent)	-0.736 <sup>***</sup> (0.126)	-0.107 (0.0748)	
Immigrants born outside EU (per cent)	0.150 (0.120)	-0.0791 (0.0623)	
Unemployment (per cent)	1.582 <sup>***</sup> (0.336)	0.432 <sup>*</sup> (0.185)	
MNR running			
Moderate right lists: 2			
Moderate right lists: 3+			
Vote for Le Pen 2002		0.979 <sup>***</sup> (0.0612)	1.042 <sup>***</sup> (0.0450)
Constant	55.94 <sup>***</sup> (9.195)	3.852 (5.687)	-2.656 <sup>**</sup> (0.787)
Adj. R2	0.436	0.855	0.852
Root MSE	4	2	2
BIC	534	410	394
d.f.	6	7	2
Log-Likelihood	-253	-189	-192
N	94	94	94

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 2:** The effect of the effective number of party lists in 1998 and ideological competition in 2004 on FN support in the French 2004 regional elections

	(1) Effective number of party lists	(2) Effective number of party lists plus Le Pen vote	(3) Ideological Competition	(4) Ideological Competition plus Le Pen vote
Effective number of lists 1998	1.402*	-0.0370		
	(0.607)	(0.249)		
Vote for Le Pen 2002		1.044***		1.125***
		(0.0468)		(0.0502)
MNR running			3.181**	-2.167***
			(1.076)	(0.483)
Moderate right lists: 2			-6.411***	-0.255
			(1.423)	(0.620)
Moderate right lists: 3+			-3.206*	-1.112
			(1.434)	(0.567)
Constant	10.59***	-2.570*	16.93***	-2.013
	(1.974)	(0.979)	(1.474)	(1.022)
Adj. R2	0.044	0.850	0.204	0.879
Root MSE	5	2	4	2
BIC	569	399	559	386
d.f.	2	3	4	5
Log-Likelihood	-280	-192	-271	-182
N	94	94	94	94

Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$